Space Weather Forecast

Issued on Sunday, 28 April 2024 at 00:20 Local

This forecast provides a four day assessment of space weather events. The probabilities stated below are for reaching or exceeding the given levels. For more information about space weather impacts please see the Met Office Space Weather Scales https://www.metoffice.gov.uk/weather/learn-about/space-weather/uk-scales

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Space Weather Forecast Headline: Chance of Moderate-class flares and slight chance of Strong flares.

Analysis of Space Weather Activity over past 24 hours
Solar Activity: Activity is currently Moderate, with two lower Moderate class flares from the largest and most magnetically complex region, currently located in the southwest quadrant of the visible disc. Aside from this region the other regions are relatively small, simple and stable or in slight decay. Seven of these lie in the western solar hemisphere, with one toward the northeast limb.

A Coronal Mass Ejection (CME) was observed starting around 26/1830 UTC, which emerged from the southeast of the disc. The resulting CME is mostly passing behind and below Earth's orbit, but there is just a slight chance of a glancing blow early on day 3 (30 Apr).

Solar Wind / Geomagnetic Activity: Solar winds have shown the onset of a coronal hole fast wind, perhaps combined with some weak CME influence. Wind speeds started at background levels but rose to become elevated approaching midday UTC, from around 330 km/s to near 500 km/s. Thereafter, wind speeds reduced erratically, 400-450km/s. The Interplanetary Magnetic Field has been mostly Moderate, but with some brief Strong peaks between 27/0400-0630 UTC. However, in recent hours it has become weak The north-south component showed alternating periods of moderately north/south orientation. Geomagnetic activity was Quiet to Unsettled (Kp 1 to 3).

Energetic Particles / Solar Radiation: Solar radiation was at background levels.

Four-Day Space Weather Forecast Summary

Solar Activity: There is a chance of Moderate-class flares and a slight chance of Strong flares, this mainly from the largest and most magnetically complex group, which is currently in the southwest quadrant.

Solar Wind / Geomagnetic Activity: A CME which originated late on 26 Apr from an area of plage and a filament eruption in the southeast of the disc, could give a glancing blow early on day 3 (30 Apr).

Recent coronal hole fast wind influence from has weakened during the second half of the 27 Apr. However, further weak coronal hole influences from two further small coronal holes in the southwest are possible in the next few days, although these lie progressively further to the south. Later on day 4 (1 May) a more likely connection comes from the narrow trans-equatorial coronal hole, which could become geoffective. This is a recurrent feature which gave Unsettled geomagnetic conditions on the last rotation.

Geomagnetic activity is expected to be Quiet to Unsettled for much of the period, but with a

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slight chance of Active to G1/Minor Storm intervals, mainly on days 1, 3 and 4 due to coronal hole or possible glancing CME influences.

Energetic Particles / Solar Radiation: Solar radiation is likely to remain at background levels, but with a decreasing slight chance of reaching the S1/Minor Radiation Storm threshold, as the sunspot cluster which was in the southwest rotates well away from the limb.

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Geomagnetic Storms:

Geo-Magnetic Storm Probability (Exceedance)	Level	Past 24 Hours (Yes/No)	Day 1 (00-24 UTC) (%)	Day 2 (00-24 UTC) (%)	Day 3 (00-24 UTC) (%)	Day 4 (00-24 UTC) (%)
Minor or Moderate	G1 to G2	No	10	5	10	10
Strong	G3	No	1	1	1	1
Severe	G4	No	1	1	1	1
Extreme	G5	No	1	1	1	1

Radio Blackouts - X Ray Flares:

X Ray Flares Probability	Level	Past 24 Hours (Yes/No)	Day 1 (00-24 UTC) (%)	Day 2 (00-24 UTC) (%)	Day 3 (00-24 UTC) (%)	Day 4 (00-24 UTC) (%)
Active	R1-R2 M Class	Yes	50	50	50	50
Very Active	R3 to R5 X	No	10	10	10	10

Solar Radiation Storms - (High Energy Protons):

Radiation Storms Probability (Exceedance)	Level (cm^{-2} sr^{-1} s^{-1})	Past 24 Hours (Yes/No)	Day 1 (00-24 UTC) (%)	Day 2 (00-24 UTC) (%)	Day 3 (00-24 UTC) (%)	Day 4 (00-24 UTC) (%)
Active	≥ S1	No	10	5	5	5
Very Active	≥ S3 *	No	1	1	1	1

* S3 ≥ 10 MeV ≥ 1000 pfu and / or ≥ 50 MeV ≥ 10 pfu. (pfu = $cm^{-2}sr^{-1}s^{-1}$)

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